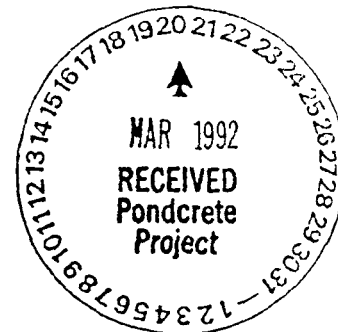


March 19, 1992

Mr. Don Ferrier
Project Manager
EG&G Rocky Flats, Inc.
5932 McIntyre Street
Golden, Colorado 80403



Subject: Technical Criteria for Freshly Cast Pondsludge Waste
[WBS 431 PONDSLUDGE PROCESS TRAIN; DESIGN CRITERIA
- HALLIBURTON NUS ROCKY FLATS DENVER]
RF-HED-92-0147

Dear Mr. Ferrier:

Based on our need to establish technical criteria for the casting station and subsequent inspection and conveying systems, we are providing the following information. Our approach is considered directionally correct and will be confirmed in Duncan using surrogate waste samples. This information is provided based upon cement setting characteristics. The procedures should ensure that operational decisions related to movement of the final waste form do not have a negative long term effect on the quality of the cemented waste form.

The waste form for Pond 207C is a very pourable mix. The material entering the half crate will have an initial slump as defined by ASTM Standards of 8 to 10 inches. The material will establish gel strength within 30 minutes, gel strength being defined as that point in time when the material exhibits properties of a solid. After 30 minutes, the container could be tipped at a 45-60 degree angle without any spillage from the container. As the cement hydration process continues, a gel lattice forms which is sensitive to vibration and movement of the product. Movement during the formation of the gel lattice will tend to affect the ultimate strength of the product. We currently anticipate the gel lattice formation commences approximately one to one and a half hours after cement mixing. Testing will be done in Duncan to verify and establish a more definitized period of time by monitoring temperature rise within the cement block. Once the temperature begins to rise, the gel lattice structure has begun forming. We therefore conclude that the freshly poured box could be safely moved during the 1 to 1-1/2 hour period following casting.

For A & B Pond material, the freshly cemented waste will not be a pourable mix. Tests will be performed in the Pittsburgh Laboratory on March 24 to observe physical properties and capabilities of various dewatering technologies (drum screen, centrifuge). It is anticipated that the material will have a gel strength set in approximately 10-15 minutes. We would expect that the box could be moved without damaging the final waste form for a period of time which is similar to Pond 207C.

HNUS is concerned that the existing half-crates which have been purchased for this project were not designed for a wet pourable mix. We anticipate that the boxes will bulge at the top along the seven foot dimension prior to the cementing product setting. HNUS is considering three methods to address the problem of box bulging. Sketches of each system are included as attachments.

HNUS is recommending that the plastic bag surrounding the waste be closed and secured at the earliest practicable period and that steps be taken to ensure

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that the bag is in intimate contact with the freshly cast waste form. Any condensation from the freshly cured material can have the capacity through capillary action to be re-absorbed into the cement block to complete the hydration process of the pozzolanic materials. HNUS is recommending using a lighter weight (4-6 mil) plastic bag inside the 14 mil bag. Once the material is cast inside the inner bag, a vacuum system would be used capable of providing a 1-2 psi negative pressure on the bag. The bag would be secured at that time to trap any condensate from escaping into the atmosphere. The system described would be similar to shrink wrap technologies used in the food processing and container packaging industries. The outer bag can be secured at any point in the process prior to securing the lid on the half crate. EG&G can determine the point during the process that they desire to perform final certification inspection and closure of the half crate box.

I am also providing as an attachment a memo from B. Rogers defining the anticipated times for performing all of the required EG&G inspections required to certify a half crate box for your use. These were produced during the material handling studies.

All of the procedures and recommendations contained in this memo are currently being tested in Duncan. I am not expecting any major surprises to come from the surrogate testing program. This information will provide evidence to support these criteria to be used during waste processing.

I understand a meeting will be held in our offices on March 20, 1992 to establish design criteria for the pouring station, inspection station, and transportation systems. I look forward to finalizing the criteria required to design and procure the necessary equipment.

Sincerely,

HALLIBURTON NUS ENVIRONMENTAL
CORPORATION



Ted A. Bittner
Project Manager

TAB/jg

cc: J. Zak

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